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ABSTRACT

This paper discusses the role of information in national development, addressing such issues as for whom and for what purposes information is needed in developing countries, the impact of the information explosion on the Third World, and the problems inherent in current national and international information infrastructures. A series of statements formulated at the COSTED-UNESCO Expert Meeting (held in Bangalore, India, in 1978) on the kind of information needed by developing countries is presented. As an example of information that is useful for developing countries but expensive to access, a list of online databases in the field of agriculture, along with their associated usage fees, is provided. Weaknesses in the information infrastructures of developing countries described by the 1975 FAO Conference on agricultural research are reviewed and the recommendations made at the conference for the strengthening of national and international information infrastructures are summarized. An 8-item reference list and a checklist on information infrastructure accompany the text. (JL)

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USE OF INTERNATIONAL DOCUMENTATION: SOME OF THE MAJOR PROBLEMS FACING DEVELOPING COUNTRIES

by

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Tanzania Library Service
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USE OF INTERNATIONAL DOCUMENTATION:

SOME OF THE MAJOR PROBLEMS FACING DEVELOPING COUNTRIES.*

by E.E. Kaungamno, Director of Tanzania Library Services.

Importance of information

Information plays a vital role in development, particularly science and technology have made it possible for several countries to provide a high standard of living for their people, through significant contributions in specific fields of national development. This paper will restrict itself to this type of information.

Information for whom and for what?

What kind of information do developing countries need and for whom? The COSTED-UNESCO Expert Meeting held in Bangalore, India during May 18-20, 1978 had this to say:[1]

(a) "In most of the developing countries, the economically and socially less developed sections of the community constitute 60 to 80 per cent of the total population. If by national development we mean the development of a nation as a whole and not just a segment of it, than the component that should receive priority consideration would be this large mass of people at this level."

(b) "In most of the developing countries there has been, in recent years, re-orientation in the national development planning and programme objectives, focussing attention on the less developed sections of the society. If information services are intended to support national development, then such systems should obviously be designed to serve these groups as well as to planners concerned with socio-economic development of these groups."

(c) "Among the economically and socially less developed sections of society, the farmers and small entrepreneurs should receive special attention, as the agricultural sector, in most of the developing countries contributes more than 50 per cent of the gross national product."

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*Paper presented to the SECOND WORLD SYMPOSIUM ON INTERNATIONAL DOCUMENTATION 20 - 22 JUNE 1980, BRUSSELS.

(d) "In view of the reorientation in the national development plans and programmes, in member-countries in the developing regions of the world, the international organizations, such as the United Nations and its specialized agencies and non-governmental organizations such as ICSU, are giving special attention to the problems of rural development in developing countries."

(e) "The existing information systems are largely designed to serve the research and academic groups who already have in some measure realized the value of the use of information in their work.... However, if information systems are to support national development as a whole, attention should be focussed on the groups who are at present not adequately served by information systems and whose development could contribute to real national development."

Thus, to summarize, the formulation of general guidelines for the design and development of information systems and services should meet particularly the needs of the economically and socially less developed sections of the community, comprising both literate and partially literate groups in developing countries. The important areas would appear to be in agriculture, health and small scale industries.

How can developing countries make effective use of international documentation?

For the purpose of this paper agriculture will be taken as the main example to show how developing countries can make use of international documentation in the field and what problems they encounter.

Information explosion:

It is not easy for decision makers, planners, administrators and the like to get up-to-date information related to their work because of information explosion. By 1974, for example, there were 7 million productive research workers (including those in agriculture and related fields) throughout the world; the amount of research publications had reached 3

million journal articles, about 600,000 reports, 250,000 books, and 300,000 patents per year.[2]

Undoubtedly, developing countries have, in theory, a wealth of information at their disposal if they use computer on-line retrieval. The information can be obtained in a few seconds or minutes. The process is simple. However the cost is formidable as illustrated in column (e) below.[3]

Some agricultural On-Line Data Bases

On Line From	Approx. No. of Citations	Updated (No. p.a.)	Typical Installations	Typical Charges	Access (1977)
				Connecting Hour	Off Line Citation
(a)	(b)	(c)	(d)	(e)	(f)
AGRICOLA (Agricultural on-Line Access supplier Supplier: National Agicultural Library U.S.A.					
1970	1,000,000	120,000	HRS + DIALOG x ORBIT ⁄	$ 25 $ 35	0.05 0.06
CAB ABSTRACTS Supplier: Commonwealth Agricultural Bureaux					
1973	480,000	130,000	DIALOG	$ 65	$ 0.15
CRIS. (Current Research Information Systen) Supplier: U.S. Dept of Agriculture					
1974	24,000	24,000	DIALOG:	$ 40	$ 0.10

\+ HRS = Bibliographic Retrieval Services (New York, USA)

x DIALOG is Lockhead Information Systen (Palo Alto, California)

⁄ ORBIT = On-Line Retrieval Bibliographic Information Time-shared. (Santa-Monica, California)

Developing countries find it extremely expensive to make use of these data bases. The farther the countries are from the location of data bases, the more expensive it becomes. Most of the data bases are in Europe and North America. Even developed countries, like Australia find on-line service to

be expensive. An Information Specialist had this to say in Ottawa at an International Seminar on Selective Dissemination of information:

> "We have been aware of the services offered by LOCKHEED, DIALOG and SDC for sometime now. Technically it is possible for any library in Australia to connect via international communications network into either DIALOG or SDC, or both. At present time it is extremely expensive to implement such services. Communication costs between Australia and the United States amount to $144 an hour."[4]

Lack of adequate information Infrastructure

Most developing countries cannot make use of international documentation because they lack well established information infrastructure. The information infrastructure of a country consists of facilities institutional resources, and manpower devoted to information activities, links to user communities, as well as effective harnessing of these elements and the body of official policies for developing and utilizing them. The appended Information Infrastructure Checklist outlines the necessary components.

Weak national infrastructure

The 1975 FAO Conference, for example, while discussing the issue of national agricultural research, which plays an important role in the information infrastructure, noted the following weaknesses of national research systems in developing countries.[5]

(a) Research is chronically under-financed.

(b) Research is often not well aligned to national needs and priorities due to poor communication and understanding between planners, administrators and research directors and inadequate machinery for review and appraisal of the validity of research programmes to changing national goals or objectives.

(c) Research organization is frequently weak and fragmented between various ministries, departments, universities and semi-autonomous agencies. Liason between these is often very poor.

(d) There is an acute shortage of trained scientists particularly those with research skills.

(e) Conditions of service, lack of equipment immobility and inadequate supporting staff often frustrate sound research.

(f) As a result of (a) most scientists in developing countries are starved of funds for travel or publication and are therefore poorly informed as to the state of knowledge emanating from international or other institutes outside (and sometimes even within) their own countries.

(g) Salaries and career prospects fail to provide adequate initiatives to keep young scientists, nor do they have sufficient freedom and flexibility to publish in reputable journals. This together with working frustrations is a major cause of the "brain drain."

(h) Linkages between research institutions and extension and other services essential to sucessful implementation of their results are poor. Researchers blame extension services for this but their results are often presented in a way which has little meaning, either because of failure to integrate biological and social economic information, or because they have insufficient relevance to conditions on the farm.

Strengthening national infrastructure

FAO has made the following major proposals regarding the improvement of national research organization and management:[6]

(a) An essential first step is the establishment of internal machinery linking national planners, ministries responsible for agriculture development research directors, universities and the private sector, for example through the medium of a National Agricultural Research Councils, with links to National Science Councils where these exist. Such a body can provide a focal point, through its secretariat, for research and training linkages with external agencies.

(b) A further step towards reducing fragmentation of effort which has already been taken by several developing countries in creation of a central national agricultural research organization, grouping all main physical, biological and social fields within an umbrella organization which has sufficient strength and flexibility to enable research to be undertaken.

It is important for developing countries to strengthen their national agricultural research and not depend wholly on international agricultural research for the following main reasons:

(a) Much of the agricultural information originates from industrialized countries and is often unsuited to the needs of developing countries without further adaptive research for social as well as technical reasons. The chances of success in its utilization are therefore greatly diminished where a country lacks a sound multi-disciplinary research capability.

(b) Numerous commodities and problems important to developing countries require research which is not covered by international or developed country research programmes and given resource constraints, cannot be covered in the future. Countries must therefore build their own research capabilities to respond to the challenges.

Strengthening international infrastructure

The FAO conference also pointed out that international research system based on international research institutes or centres offer special advantages to developing countries because:

(a) They are the only group of political independent institutes charged with agricultural research aimed at priority problems of wide importance to developing countries.

(b) They are able to take risks. Because of their wide base of support, and because they are expected by their supporters to be in the vanguard of innovation they are more flexible to test new methods than is possible with many government supported institutions.

(c) Their geographical coverage is much wider than that of national institutes.

(d) They offer more and better training facilities for scientists.

In exploiting international resources using international information network international cooperation for information transfer is essential. International information networks have the following general characteristics:[7]

(a) They are systems in which members States are not passive clients but are active participants in gathering, processing and dissemination of information

(b) Their organizationaly framework can be summarized as follows.

(i) each participating Member State, through its national institutions, is responsible for identification and collection of information produced within its borders and for selection of information to be transmitted to the international system;

(ii) information received by the system is processed and equitably made available to participating Member States.

(iii) each Member state again through its own institutions, selects the information it needs from the system and is responsible for dissemination and use at the national level.

It is only through this kind of collaboration between member States and international organization that international information networks can functions and developing countries can make use of international documentation.

These are some of the problems hindering the effective use of international documentation in agriculture.

Other major impediments which affect developing countries include the following:

Finance

Financial constraints, especially foreign exchange, as well as strict foreign exchange controls limit the amount of material or information to be

bought or used. The Unesco Book Coupon Scheme introduced to mitigate foreign exchange problems is very much appreciated by developing countries.

Manpower

In most developing countries there is lack or shortage of professionally, trained staff who can organize effective information systems and who can impress on planners, decision makers and administrators on the role of information in development.

CONCLUSION

In the final analysis, the effective use of international documentation would appear to be linked with the general issue of the transfer of scientific and technological information to developing countries. In the wider international context the issue concerns the New International Economic Order (NIEO) and the transfer of technology. Section IV of the Programme of Action on the Establishment of NIEO dealing with the transfer of technology has the following objectives:

(a) Formulation of an international code of conduct for the transfer of technology corresponding to needs and conditions prevalent in developing countries;

(b) Giving access on improved terms to modern technology and to adapt that technology, as appropriate to specific, economic., social and ecological conditions and varying stages of development in developing countries;

(c) Expanding significantly the assistance from developed to developing countries in research and development programmes and in the creation of suitable indigenous technology;

(d) Adapting commercial practices governing transfer of technology to the requirements of the developing countries and preventing abuse of the rights of sellers;

(e) Promoting international cooperation in research and development in exploration and exploitation, conservation and the legitimate utilization of natural resources and all sources of energy.

Thus under the NIEO conceptual framework, there is ample scope for the transfer of technology from the developed to developing countries. For developing countries, it is crucial that the NIEO should be effectively implemented as soon as possible. As we know the NIEO hopes to eliminate the widening gap between the developed and the developing countries and ensure steadily accelerating, economic and social development and place and justice for the present and future generation. The liberalisation of the transfer of information from developed to developing countries will play a crucial role in bridging this gap.

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INFORMATION INFRASTRUCTURE: A CHECKLIST *

1. Governmental Policy for Information

   A. Does the government have a national policy for scientific research and development?

   B. If so, does it have a national policy for scientific and technical information?

   C. Is there a government agency serving as a focus for information policy formulation?

   D. What percent of the national research and development budget is spent on scientific and technical information?

II Manpower Resources

   A. Existing

      1. What is the number of trained personnel? What is the estimated national need?

      2. To what extent has their training been indigenous; to what extent outside the country?

      3. Are the information and library professions, and information specialists in other professions suitably compensated?

      4. Are there nationally recognized standards for education and training in the information science?

   B. Potential for Training Manpower

      1. What is the capacity of indigenous training institutions?

      2. Is there fiscal support for trainees-within, or outside the country?

      3. Do U.N. agencies or nongovernmental organizations (including private companies) sponsor indigenous training programs?

         Fellowships for training overseas?

III. Information Resources and facilities

   A. Libraries, specialized information and documentation centres

      1. What is the volume, character, and quality of information resources? Have they been selected in relation to development needs?

      2. Are they appropriately distributed geographically in relation to user needs?

      3. Have they been adequately organized for use?

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* National Academy of Sciences. Office of the Foreign Secretary. Scientific and Technical Information for Developing countries; a Report of Ad-Hoc Advisory Panel of the Board on Science and Technology for International Development. Washington DC. April 1972 pp. 26 - 28

4. What types of information services do the centres reach them?

5. What populations are being served? How do the centres reach them?

6. What is the level of fiscal support given these institutions?

B. Publication Capabilities

1. What is the status of the scientific and technical periodical press? Book publishing?

2. What abstracting and indexing services exist?

3. What is the status of scientific and technical book import?

4. What translation capabilities exist in the sciences and technologies?

C. Computer Capabilities

1. What resources (hardware, trained manpower) exist?

2. What is the overall status of computer application?

3. Are proposed tasks significant and large scale enough to justify computer application? Can economies be demonstrated?

IV. Institutional Resources

A. What governmental ministries and programs have roles in technology transfer through information?

B. What regional or intergovernmental economic development organization operate within the country for the same purpose?

C. What nongovernmental organizations, including scientific and technical societies, have related interests?

D. Do the universities and technical colleges provide services to industry for technology transfer?

E. What role does industry, including multinational companies, play in effecting technology transfer?